## CLAIMS

What is claimed is:

1. An automatic adaptive voice/data device, comprising:

a high priority transmission queue;

a low priority transmission queue;

a data rate detector to detect a data rate of a data stream from a particular source; and

a periodicity detector to detect a periodicity between data packets from said particular source;

wherein data packets are provided to said high priority transmission queue and said low priority transmission queue based on their data rate and periodicity.

2. The automatic, adaptive voice/data device according to claim 1, wherein:

data packets having a data rate and periodicity each within a particular range associated with voice data are passed to said high priority transmission queue.

3. The automatic, adaptive voice/data device according to claim 1, wherein:

said automatic, adaptive voice/data device is an Ethernet compliant device.

4. The automatic, adaptive voice/data device according to claim 3, wherein:

said data flow identification is based upon at least one of a source address and a destination address of said data flow.

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5. The automatic, adaptive voice/data device according to claim 4, wherein:

said source address and said destination address are media access control addresses.

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6. The automatic, adaptive voice/data device according to claim 4, wherein:

said source address and said destination address are Internet protocol addresses.

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7. The automatic, adaptive voice/data device according to claim 4, wherein:

said source address and said destination address are transport control protocol ports.

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8. A method of automatically assigning a quality of service in an automatic, adaptive voice/data device, comprising:

identifying a data flow from a particular source;

determining a data rate of said data flow;

20      determining a periodicity of a receipt of packets in said data flow; and

assigning a particular Quality of Service to said packets based on said data rate and periodicity.

25      9. The method of automatically assigning a quality of service in an automatic, adaptive voice/data device according to claim 8, wherein:

said step of assigning assigns packets to said particular Quality of Service having a data rate and periodicity associated with a

30      voice stream.

10. The method of automatically assigning a quality of service in an automatic, adaptive voice/data device according to claim 9, further comprising:

tagging a packet within said data flow.

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11. The method of automatically assigning a quality of service in an automatic, adaptive voice/data device according to claim 10, further comprising:

forwarding said tagged packet within said data flow is

10 according to said particular Quality of Service.

12. The method of automatically assigning a quality of service in an automatic, adaptive voice/data device according to claim 9, further comprising:

15 identifying said data flow from said particular source is according to a source address and a destination address.

13. The method of automatically assigning a quality of service in an automatic, adaptive voice/data device according to claim 12,

20 wherein:

said source address and said destination address are media access control addresses.

14. The method of automatically assigning a quality of service in an automatic, adaptive voice/data device according to claim 12,

25 wherein:

said source address and said destination address are Internet protocol addresses.

15. The method of automatically assigning a quality of service in an automatic, adaptive voice/data device according to claim 14, wherein:

said source address and said destination address are transport control ports.

16. The method of automatically assigning a quality of service in an automatic, adaptive voice/data device according to claim 12, further comprising:

tagging said packet within said data flow according to a length of said packet.

17. The method of automatically assigning a quality of service in an automatic, adaptive voice/data device according to claim 9, wherein said step of determining said particular Quality of Service comprises:

calculating a time difference between a last most recent packet arrival and a current clock value.

18. A method of optimizing a quality of service in an automatic, adaptive voice/data device, comprising:

identifying a high priority packet in a data flow based solely on a history of packets received from a same source;

calculating an expected next arrival time of a next high priority packet in said data flow;

determining whether a pending low priority packet will likely interfere with a transmission of said next high priority packet in said data flow; and

forwarding said high priority packet in said data flow.

19. The method of optimizing a quality of service in an automatic, adaptive voice/data device according to claim 18, wherein:

said history of packets received comprises a data rate and periodicity of packets from said same source.

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20. The method of optimizing a quality of service in an automatic, adaptive voice/data device according to claim 18, further comprising:

calculating a completion time of said pending low priority

10 packet.

21. The method of optimizing a quality of service in an automatic, adaptive voice/data device according to claim 19, further comprising:

15 delaying transmission of said pending low priority packet when said completion time of said pending low priority packet exceeds said next arrival time of a next high priority packet in said data flow.

22. The method of optimizing a quality of service in an

20 automatic, adaptive voice/data device according to claim 19, further comprising:

forwarding said pending low priority packet when said next arrival time of a next high priority packet in said data flow exceeds said completion time of said pending low priority packet.

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